January 2009 Climate Summary for Southwest Lower Michigan

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Overview

According to most reporting stations in Southwest Lower Michigan, January of 2009 was the coldest January since 1994. Snowfall was above normal while precipitation was generally below normal (Table 1). Most locations near and east of US-131 experienced between five and ten days with temperatures below zero. This was the greatest frequency of below zero temperatures since 1994. Most climate reporting stations north and east of Grand Rapids did not get above freezing in January. The last time this happened was in January of 1977.

Figures 1-3 show these trends at the primary climate sites of Grand Rapids, Lansing and Muskegon. The high temperature rose above freezing for a few short hours on the 4th, 23rd and 31st at all three of these sites. The coldest weather of the month was from the 13th through the 20th when temperatures averaged more than 15 degrees below normal. At Grand Rapids, the week ending on January 20th averaged 7 degrees above zero. This was the coldest week seen in Grand Rapids since a week in January of 1994, when Grand Rapids averaged 1 degree below zero. From the 12th through the 26th lows frequently were below zero at the primary climate sites. All of Southwest Michigan saw average temperatures between five and seven degrees below normal (Fig. 4). The largest departures from normal were north of Muskegon and west of US-131, where temperatures averaged more than six and half degrees below normal.

At least a tenth of an inch of snow fell every day from the 6th through the 18th (Fig. 5). This thirteen-day run ties with events in 1981 and 1969 for the second longest string of days with measurable snow. Lansing had a similar event with over a tenth of an inch of snow from the 6th through 14th (Fig. 6). This nine-day run ties the fourth place record set in 1985. Muskegon had over a tenth of an inch of snow every day from the 7th through the 18th (Fig. 7).

Total precipitation ranged from one to two inches (Fig. 8a). The heaviest amounts were west of US-131 and south of Grand Haven. Precipitation was below normal across the area (Fig. 8b). Total snowfall ranged from near 20 inches northeast of Alma to over 40 inches west of US-131, south of Grand Haven (Fig. 9a). Snowfall was above normal across all of Southwest Michigan (Fig. 9b). The largest departures were west of US-131.

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TABLE 1. Reported temperature, precipitation and snowfall amounts for January 2009 at selected climate stations in Southwest Lower Michigan. Normals are computed from 30-year averages from 1971-2000.

Location		Temperature (degrees F)	Precipitation (inches)	Snowfall (inches)
Grand Rapids	*Reported*	17.5	1.74	29.9
	Normal	22.4	2.03	21.1
	Departure	-4.9	-0.29	+8.8
Lansing	*Reported*	15.7	1.05	18.7
	Normal	21.6	1.61	14.0
	Departure	-5.9	-0.56	+4.7
Muskegon	*Reported*	19.1	2.38	41.7
	Normal	23.5	2.22	34.4
	Departure	-4.4	+0.16	+ 7.3

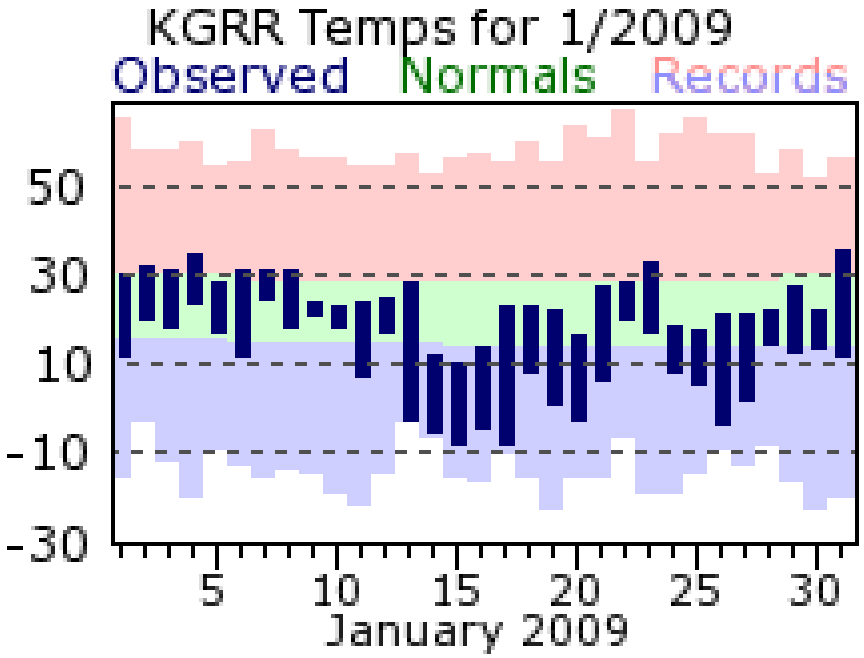


FIG. 1. Observed temperatures at the Grand Rapids International Airport. Dark blue bars are the temperature range for each day. The green strip indicates the normal range of temperatures. Record high and low temperatures are indicated at the top of the pink area and the bottom of the blue area, respectively. Normals computed as in Table 1.

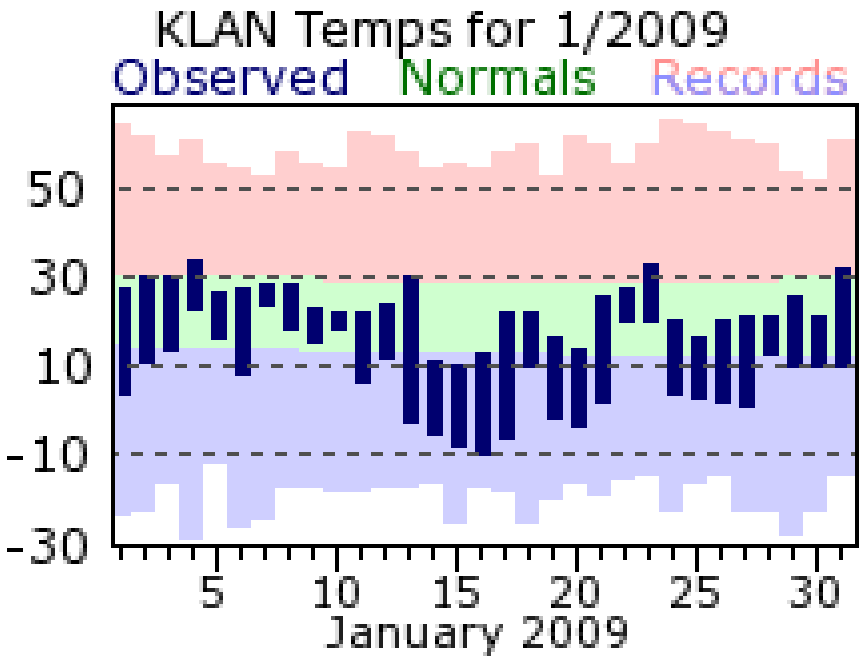


FIG. 2. As in Fig. 1 except for the Lansing airport.

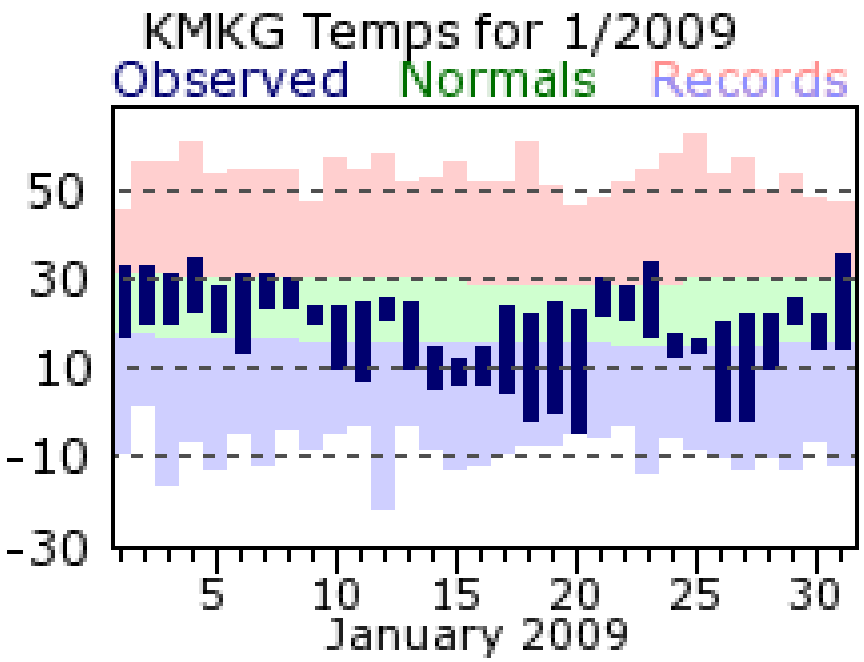


FIG. 3. As in Fig. 1 except for the Muskegon airport.

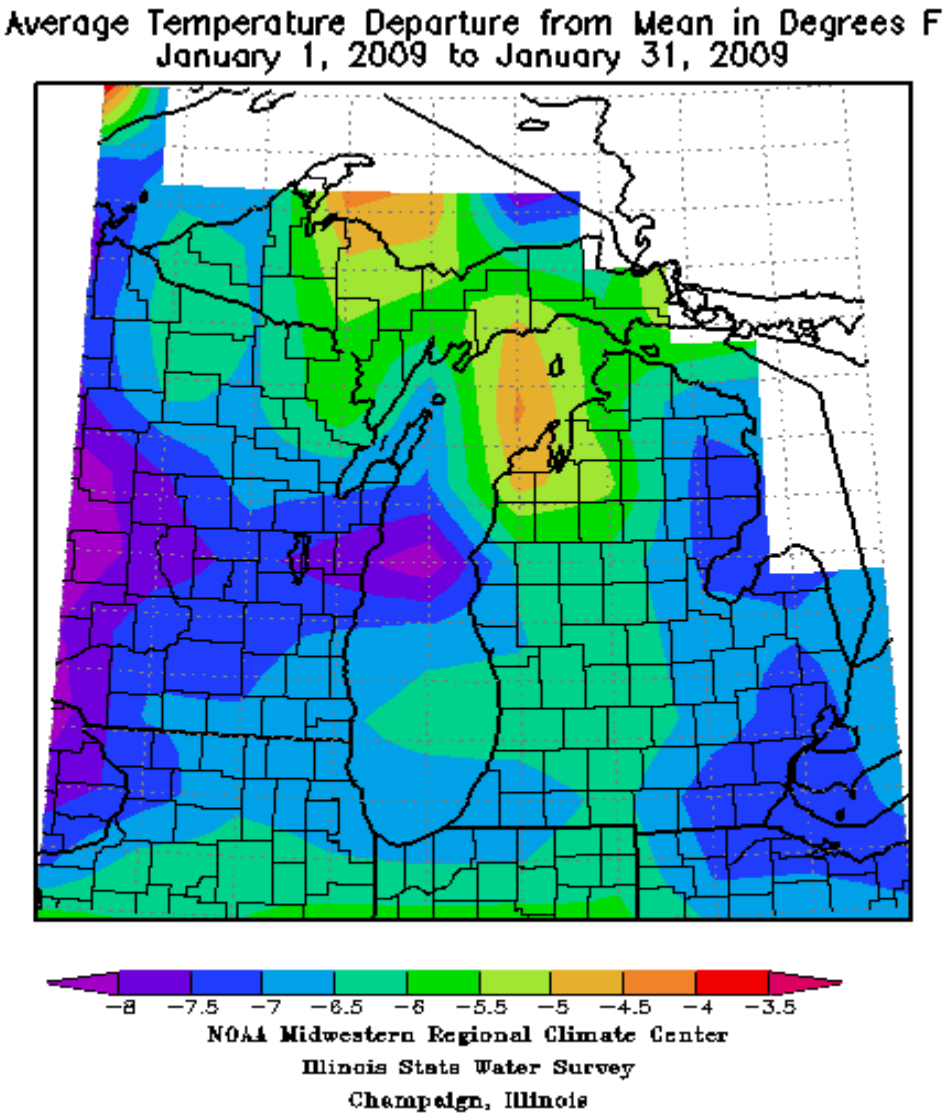


FIG. 4. Average temperature departure (degrees F) for January of 2009.

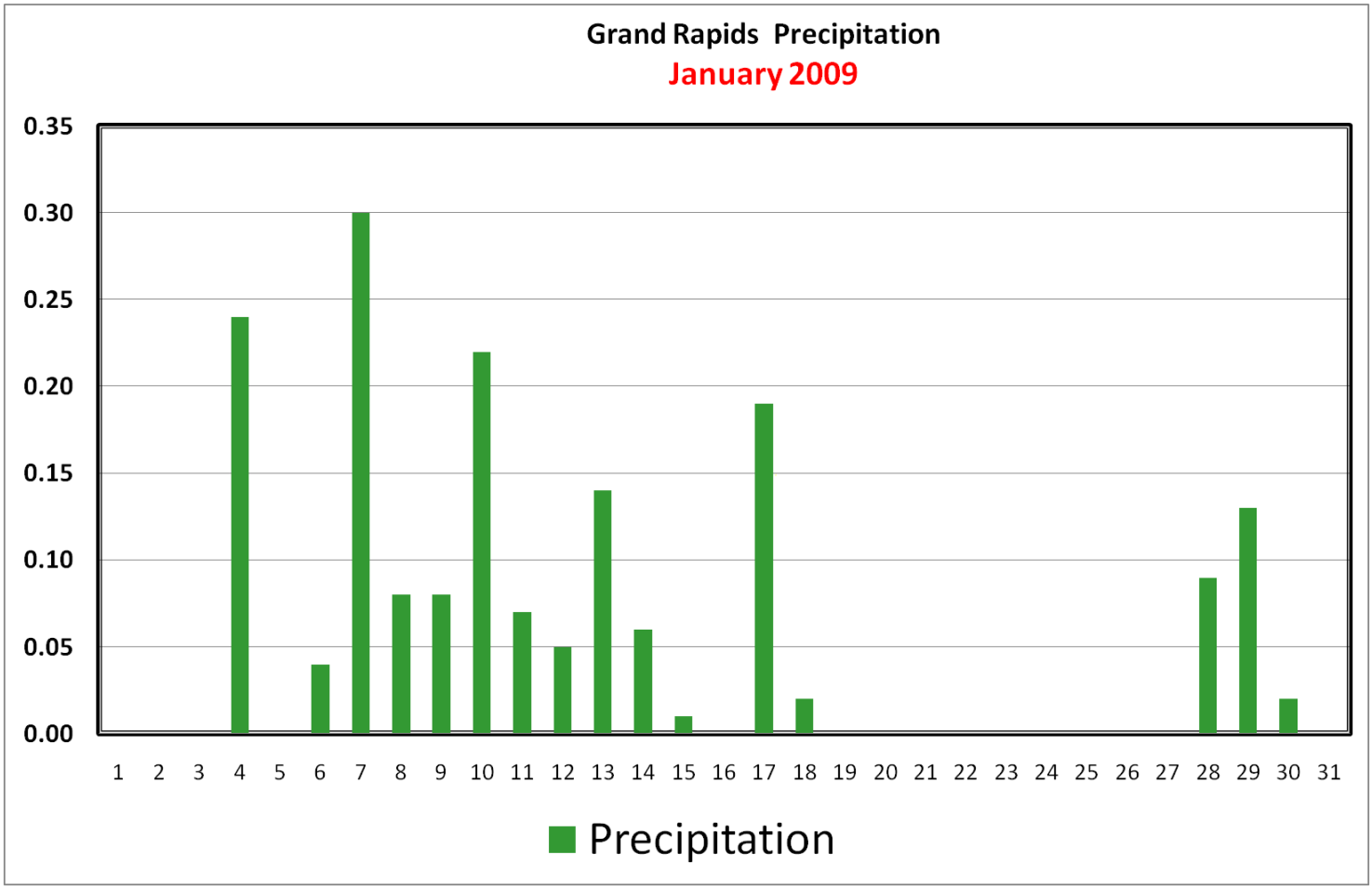


FIG. 5. Daily precipitation in inches for January of 2009 at the Grand Rapids International Airport.

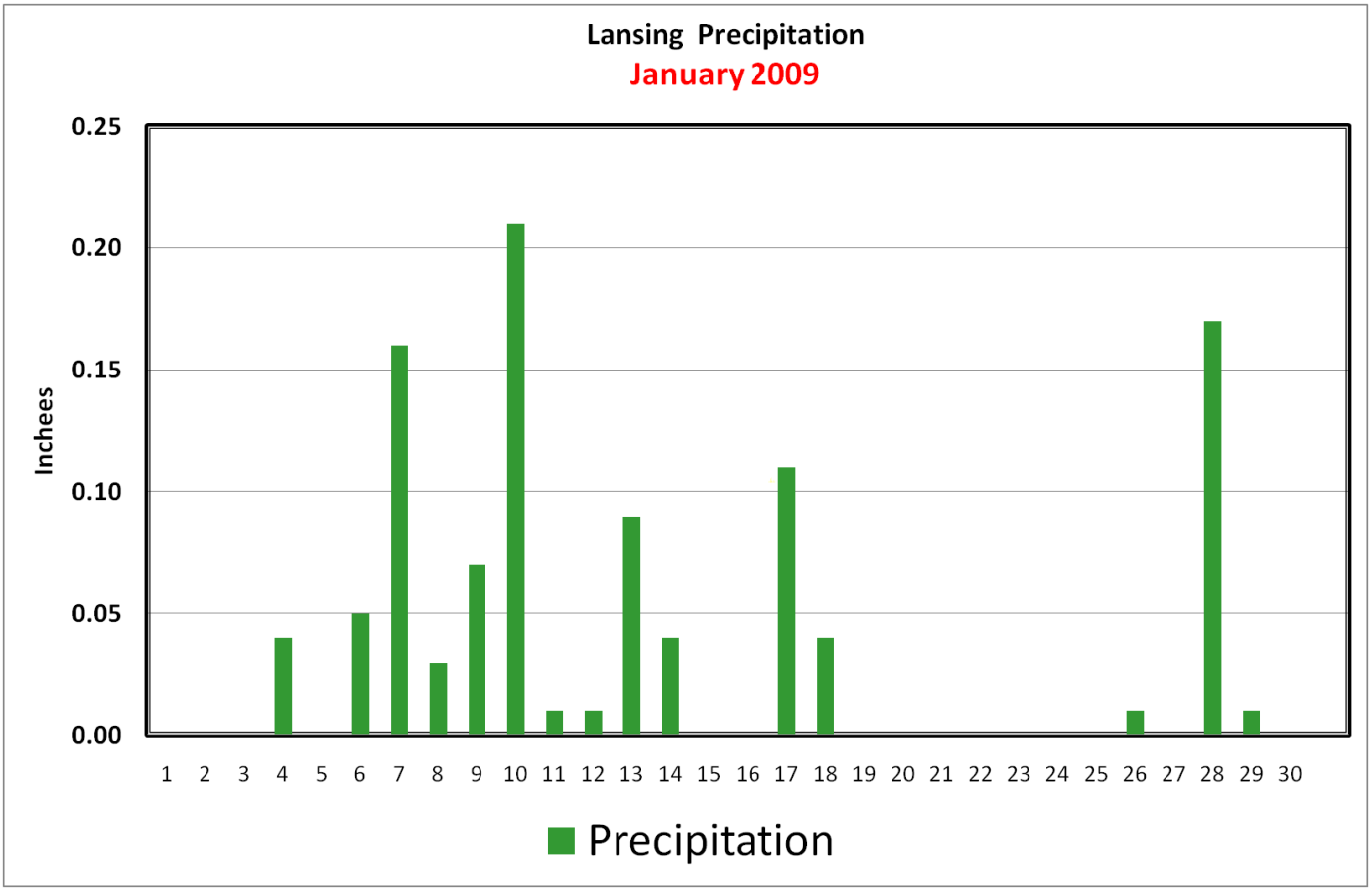


FIG.6. As in Fig. 5 except for the Lansing Capital City Airport.

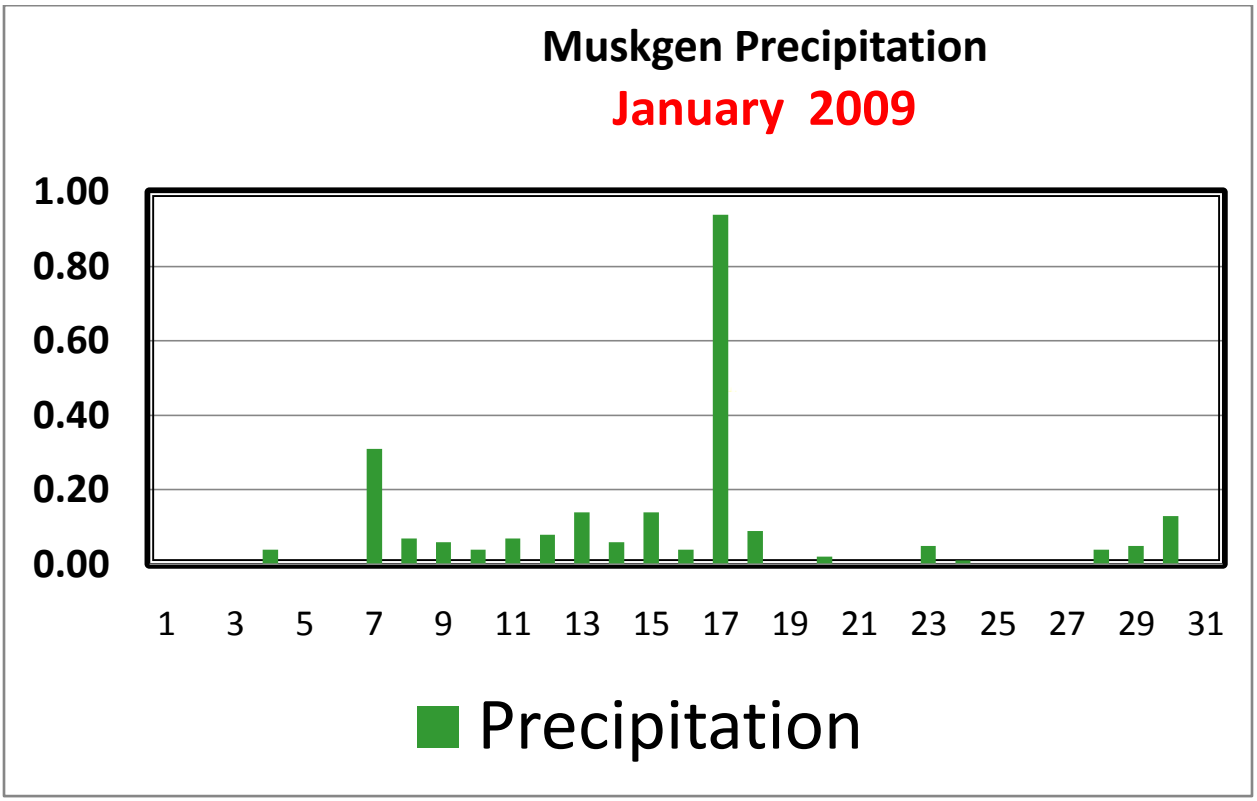
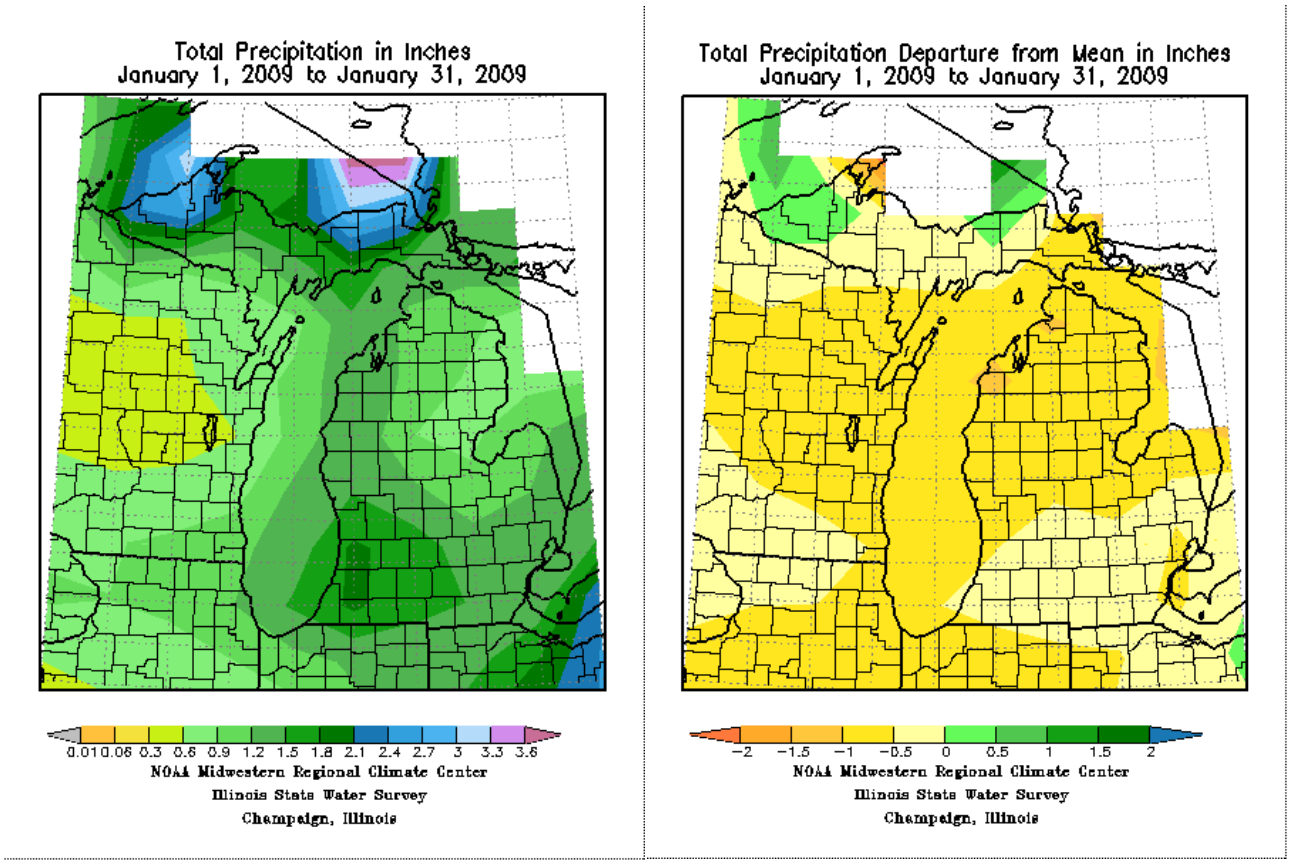
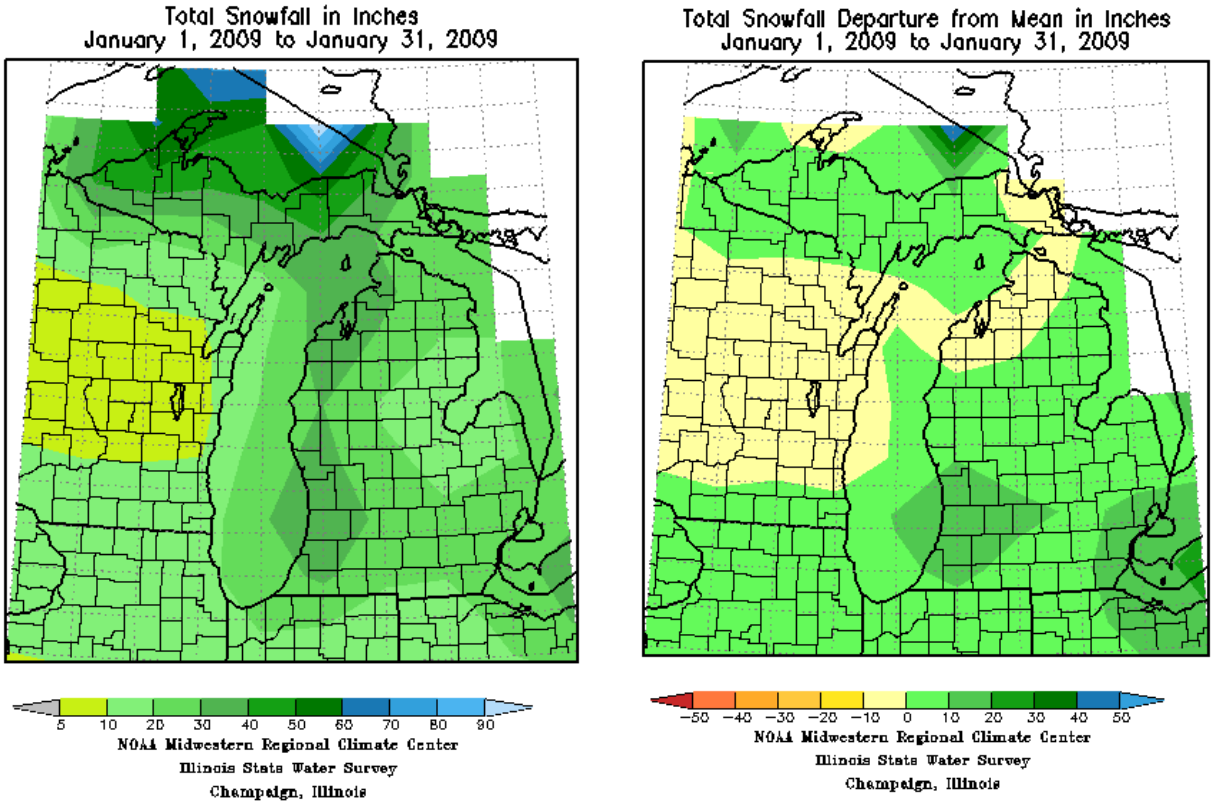


FIG. 7. As in Fig. 5 except for the Muskegon County Airport.



(a) Inches of Total Precipitation (b) Total Precipitation Departure from Mean

FIG. 8. (a) Total precipitation in inches for January 2009, and (b) Total precipitation departure from the mean.



(a) Snowfall (b) Snowfall departure from mean

FIG.9. (a) Snowfall in inches for January 2009, and (b) departure from the mean.

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Highlights of the month

1st – 3rd

Above normal temperatures prevailed through this period. Even through temperatures were above normal, the temperatures remained below freezing. There were a few flurries on the 2nd.

4th -5th

A surge of warm air brought a period of freezing rain in the morning that was followed by a few hours of temperatures ranging from the lower to mid 30s. A weak cold front moved through during the afternoon on the 4th. That was followed by a weak high pressure system that brought below freezing temperatures and drier weather.

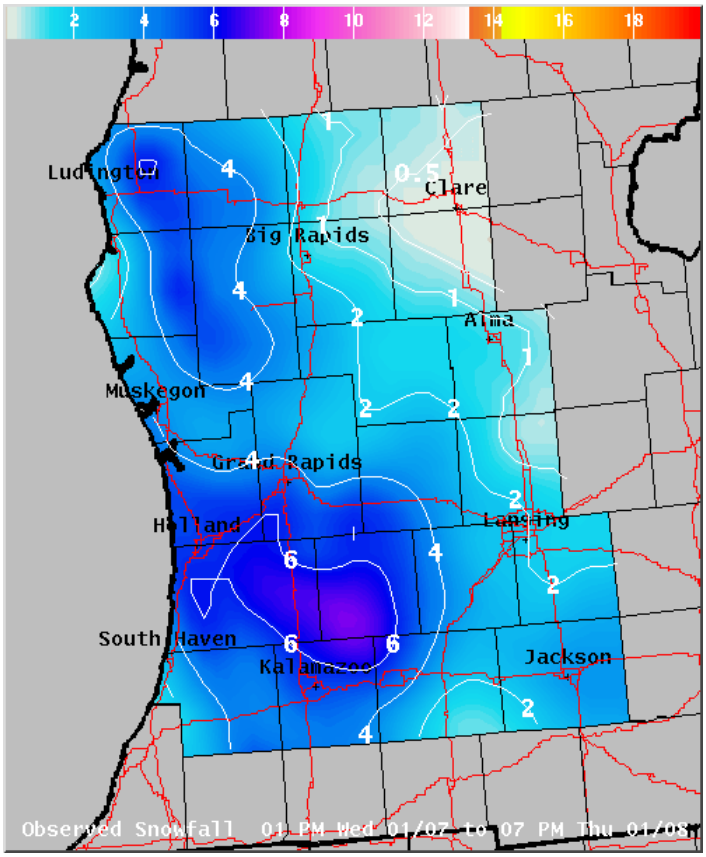

FIG. 10. Storm total snowfall from January 7th to 8th.

7rd – 8th

The first significant snowstorm of the month resulted from the merger of a storm moving southeast from Minnesota with another storm that moved northeast from the western Gulf of Mexico. The resulting storm produced 6 to 8 inches of snow in the Grand Rapids area to 3 to 5 inches across most of the remainder of Southwest Lower Michigan (Fig. 10).

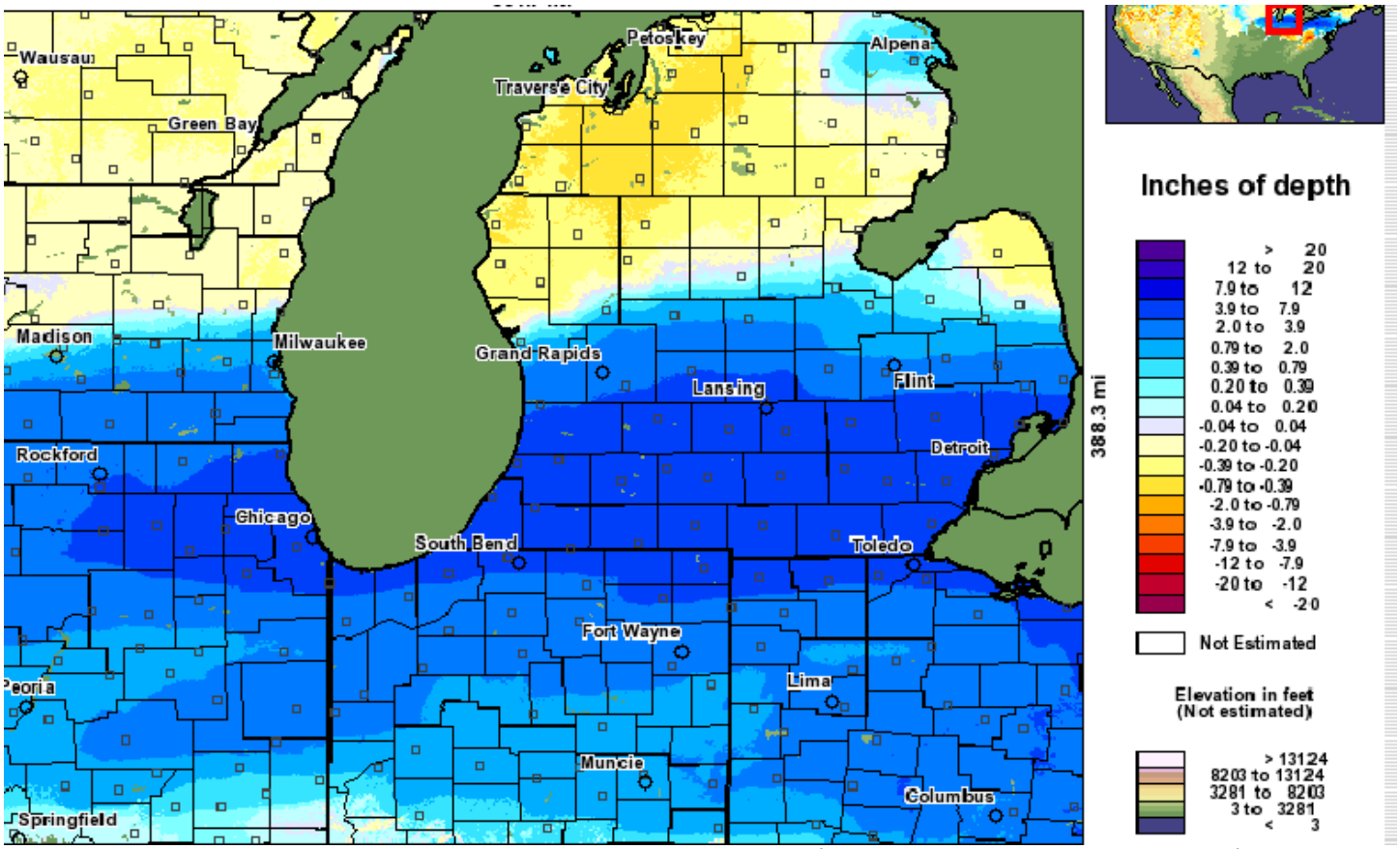

Fig. 11. The change in snow depth from 1 AM on January 9th through 1 AM on January 10th due to the storm that tracked east through southern Illinois into southern Ohio.

9rd – 12th

A series of weak Canadian high pressure systems maintained near seasonal temperatures through this time period. From the late on the 9th into the early morning hours of the 11th a storm system passed east across southern Illinois through southern Ohio. While it snowed nearly every day during this time, the most significant snowfall occurred from early in the morning of the 10th into very early in the morning on the 11th of January over the southern sections of Southwest Michigan. Snowfall amounts of up to 15 inches were reported 6 miles southwest of Kalamazoo with 8 to 12 inches common near Interstate 94 to just south of Interstate 96 (Fig. 11). This storm had the largest area of heavy snowfall (more than 6 inches in 12 hours) of any of the snowstorms in January.

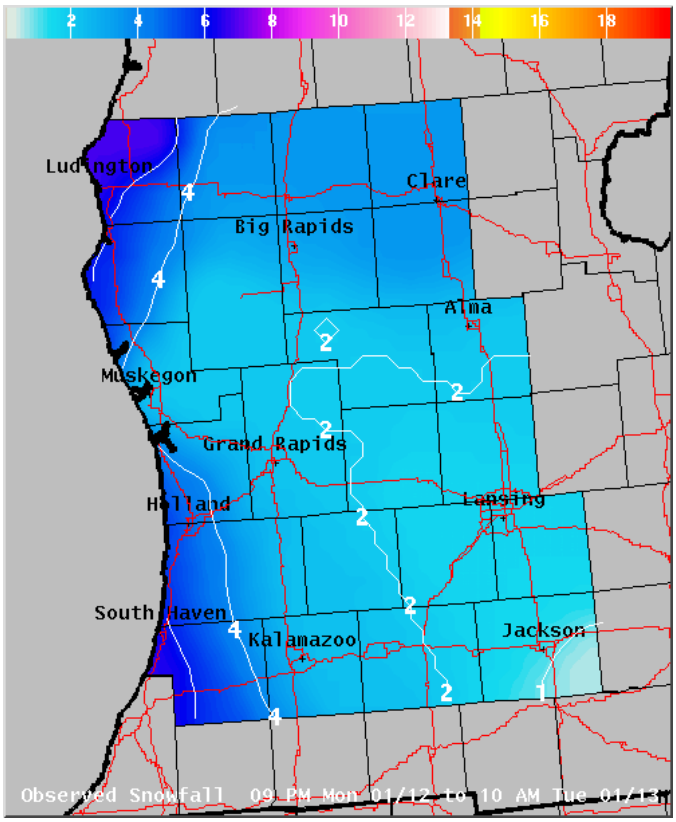

FIG. 12. Storm total snowfall from 9 pm on January 12th through 10 AM on the 13th.

12th - 13th

The first true arctic air mass moved into Southwest Lower Michigan. Just ahead of the arctic front a clipper type storm system raced across Iowa on the 12th, and toward the Detroit area by early in the morning of the 13th. This produced 1 to 3 inches of snow across inland areas. Lake enhancement increased the snowfall to 3 to 6 inches west of US-131 (Fig. 12). Behind this system high temperatures were in the teens and lows were below zero inland of Lake Michigan.

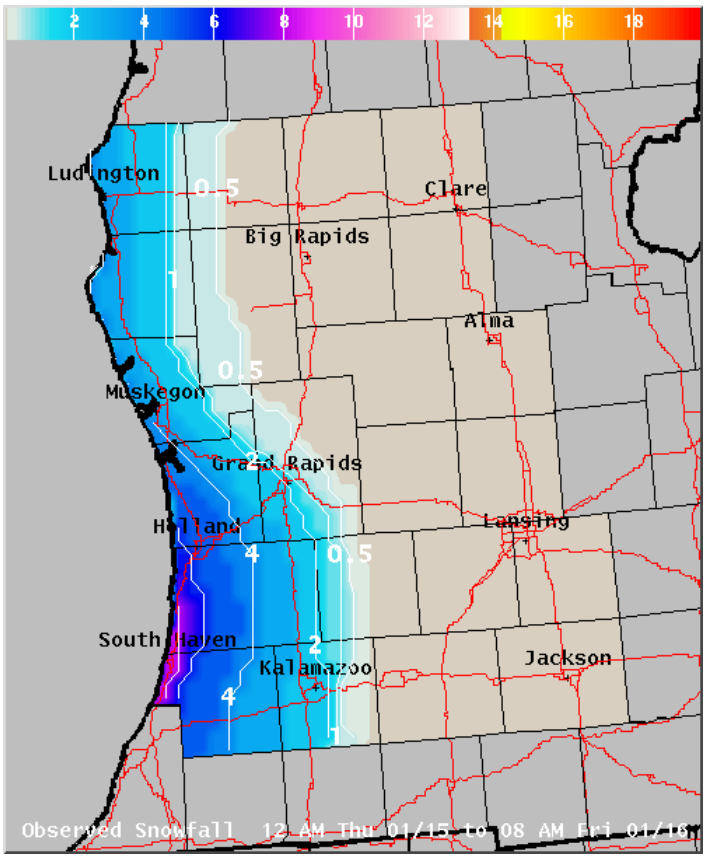

FIG. 13. Storm total snowfall from midnight on January 15th through 8 AM on the 16th.

15th - 16th

A second push of cold air followed yet another clipper system that took a track across Southern Illinois through Southern Ohio on the 14th. That set the stage for a pure lake effect snow event from the 15th into the 16th (Fig. 13). Snowfall amounts over 8 inches fell from near South Haven to west of Covert.

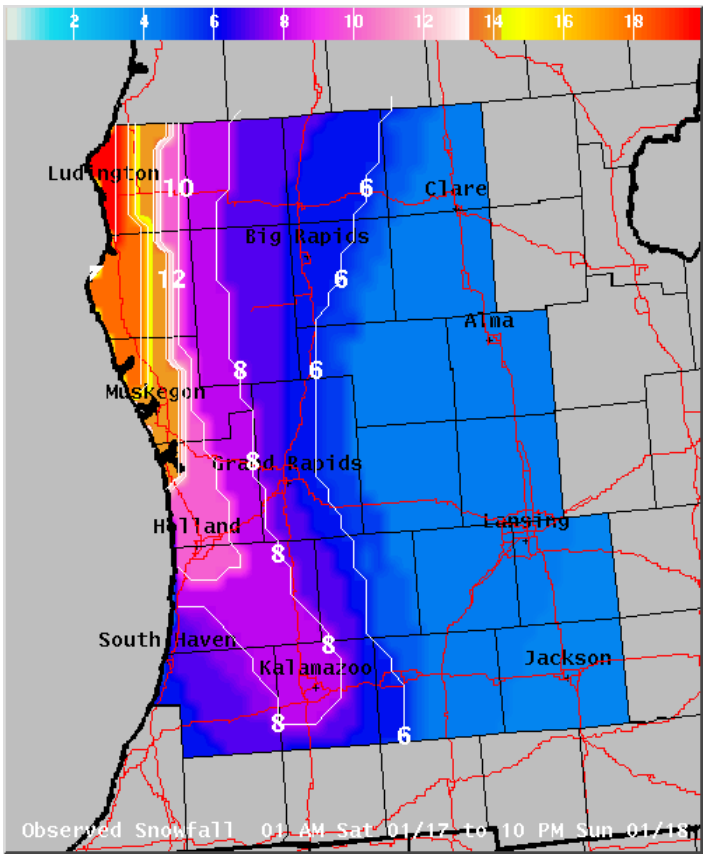

FIG. 14. Storm total snowfall from January 17th at 1 AM to the 18th at 10 PM.

17th – 18th

The strongest storm of the month was the result of an Alberta Clipper system that tracked east near Route 10 during the afternoon and evening of the 17th. That resulted in snowfall amounts up to 20 inches along the Lake Michigan shore north of Muskegon (Fig. 14). The storm brought 4 to 6 inches across the remainder of Southwest Michigan.

19th – 22th

There was a quiet weather period after 13 days of snow nearly every day. That quiet period resulted from the storm track shifting north into southern Canada. Even so it remained very cold through this time.

23th – 28th

There was a brief warm up as another Alberta Clipper system passed through Northern Lower Michigan on the morning of the 23rd. Snowfall from this system was mostly less than four inches across the area. This brought the second short-lived period of above freezing temperatures to southern sections during the early morning hours of the 23rd. Behind that clipper system was huge polar high came from northern Siberia a week earlier. That arctic air mass then moved east across Alaska into United States behind that clipper system. This brought yet another period of highs in the teens and lower twenties.

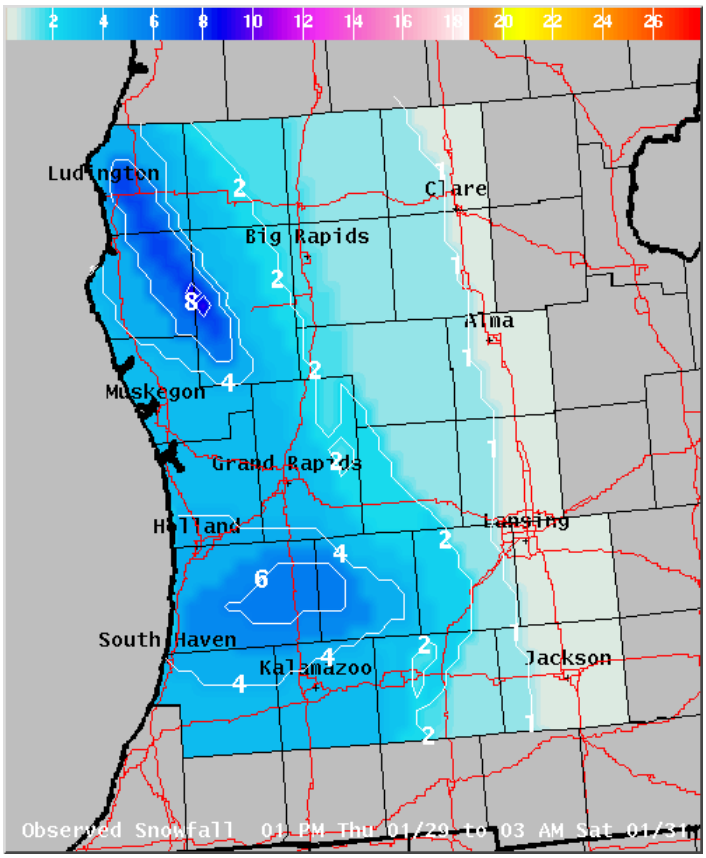

FIG. 15. Storm total snowfall from January 29th at 1 PM to January 31st at 3 AM.

29th – 31st

The final storm of the month was yet another clipper system that moved across Lake Superior. The northwest flow behind the system brought 6 to 10 inches of snow to the northwest lake effect areas in Oceana and Mason Counties (Fig. 15).